

**Department of Education
Federal Student Aid
Chief Information Office
Electronic Commerce Applications Development**



**F E D E R A L
S T U D E N T A I D**

**QUALITY ASSURANCE
HANDBOOK
(FINAL)**

Performance Standards and Procedures

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FOREWARD

BSC Systems, Inc. would like to thank those involved in the development of this document.

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EXECUTIVE SUMMARY

This revised handbook has been prepared for the Department of Education, Federal Student Aid organization (FSA). FSA has embarked upon an ambitious program to provide state-of-the-art information access to its user population: students, financial institutions, and financial professionals at learning institutions. Due to the extensive user demographics as well as the visibility of the program, FSA decided to impose the rigors of Independent Verification and Validation (IV&V) upon critical software application developments. As a pioneer Performance Based Organization, FSA desires to establish standards and criteria with which to measure the performance of its IV&V agents.

The first iteration of the QA Handbook was released last year and provided detailed standards and procedures for IV&V and IV&V related Security Assessments. This update reflects:

- Adoption by FSA of the Solution Life Cycle (SLC) development methodology
- A refining of IV&V “best practices” to the FSA environment
- An approach for “tailoring” IV&V approaches to reflect life cycle methodology, traditional versus accelerated development, centralized versus Internet development environments, and externally imposed constraints, such as budget limitations
- Standards and procedures to reflect renewed security awareness and address security effectiveness evaluations beyond the scope of traditional IV&V security evaluations

The IV&V approach presented in this handbook facilitates a team-building relationship between the developers and IV&V staff. The approach features open lines of communication and cooperation between the two groups while maintaining absolute independence and objectivity of and by the IV&V staff. This approach is facilitated through risk based monitoring of the targeted processes and products in a structured manner and features timely communications of findings to the development organization.

This handbook is structured to include standards and procedures for:

- Conducting IV&V Reviews
- Security Effectiveness Evaluations
- IV&V Reporting
- IV&V Performance Measures

Each of these standards and procedures has been combined into this Quality Assurance Handbook. The purpose of this handbook is to establish standards and procedures for conducting IV&V and assessing the information security of designated FSA systems under development and in production.

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6. INDEPENDENT VERIFICATION AND VALIDATION PERFORMANCE STANDARDS AND PROCEDURES

6.1 Introduction

These Independent Verification and Validation (IV&V) and Security Assessment Performance Standards and Procedures establish the performance measurement system and associated requirements necessary for the IV&V Team to document its activities in a measurable format for FSA. Execution of a plan that follows these guidelines will help to ensure that the IV&V Team can consistently provide timely performance information in addition to a common performance measurement format to FSA. IV&V and Security Assessment performance monitoring and measurement will occur throughout the target system development life cycle. These IV&V and Security Assessment performance standards and procedures specify the content, format, and timing of IV&V and Security Assessment performance reports to be utilized for the FSA Modernization Program. These standards and procedures are intended for FSA to evaluate the IV&V or Security Assessment contractor and maintain a repository of performance information. These IV&V and Security Assessment performance standards and procedures allow for quarterly evaluation/review by FSA.

6.1.1 Objectives

The goal of a performance measurement system is to ensure that the system is not too costly, produces high-quality data, and provides useful information for management and policy purposes. It should also enable the Program Manager to judge whether continuous improvement is being made in terms of efficiency and effectiveness, and to ensure that reported improvement in one of these areas has not been made to the detriment of another.

Performance measurement will provide assistance to FSA IV&V and Security Assessment in:

- Performance Based Organization (PBO) tasks
- Coordination of multiple contracts
- Coordination of multiple projects
- Improvement in FSA software development, IV&V, Security Assessment, and test processes
- System development status information distribution/dissemination
- Project risk management

Performance measures should be derived directly from the IV&V or Security Assessment program's goals and objectives. They should measure the extent to which specific goals and/or objectives are being accomplished. As a result, performance management contributes to better decision-making and accountability. It is important to examine program effectiveness or outcomes, rather than just quantity or efficiency.

A well-developed performance measurement system will enable the IV&V and Security Assessment Teams to spot weaknesses, as well as strengths and opportunities. Thus, better knowledge of strengths and weaknesses will give the Program Manager (as well as other users) an opportunity to diagnose IV&V and Security Assessment organizational growth capabilities and take relevant actions.

6.1.2 Performance Assessment

Performance measurement is the ongoing monitoring and reporting of program accomplishments, particularly progress towards preestablished goals. Performance measures may address the type or level of program activities conducted, the direct products and services delivered by a program, and/or the results of those products and services. A program may be any activity, project, function, or policy that has an identifiable purpose or set of objectives. In providing performance measures, the IV&V and Security Assessment Teams will use both metrics and assessment schemes such as peer review and customer satisfaction. Performance measurement will be constructed to encourage improvement, effectiveness, efficiency, and appropriate levels of internal controls. It will incorporate best practices related to the performance being measured and cost/risk/benefit analysis, where appropriate. Performance metrics will lead to a quantitative assessment of gains in customer satisfaction, organizational performance, and workforce excellence. The key elements of the performance metrics will address alignment with organizational mission, quality of product, timely delivery, cost reduction and/or avoidance (if applicable), cycle time reduction, customer satisfaction, meeting Department of Education requirements, and meeting commitments.

The cause-effect relationship between IV&V or Security Assessment outputs and their eventual outcomes is complex. It will often be difficult to quantify these relationships empirically, even though obvious logical relationships exist between the outputs and outcomes. The difficulties may arise from:

- The long time delays that often occur between the IV&V and Security Assessment results and their eventual impacts
- The fact that a specific outcome is usually the result of many factors, not just a particular IV&V or Security Assessment program or project
- The fact that a single IV&V or Security Assessment output may have several outcomes, often unforeseen, rather than a single unique outcome

- Potential negative outcomes that can be prevented due to proactive IV&V or Security Assessment solutions

Consequently, the cause-effect relationship between IV&V or Security Assessment outputs and their resultant outcomes should be described in terms of logical causality. Quantitative empirical demonstrations should not be required, and are often not even possible. Customer satisfaction evaluations are a valuable tool for hard to measure outcomes. Since IV&V and Security Assessment outcomes are often not quantifiable, IV&V and Security Assessment measures should always be accompanied by narrative in order to provide full opportunity for explanation, presentation of evidence of success, and discussion of the nature of non-metric peer review and customer evaluation measures. Dogmatic tracking of metrics should be avoided when experience determines that they are not useful. Although it is important to be consistent in the types of metrics and goals that are tracked, flexibility in dropping or adding metrics could prove very beneficial in arriving at the most useful set of metrics. Therefore, it is recommended that a set of mandatory measures, as well as a set of program-dependent measures, be designed and implemented for the specific IV&V or Security Assessment project. The entire set of performance measures will be described in the project-specific IV&V Plan discussed in Section 5.2.2.1 and the Security Assessment Approach described in Section 4.2.1.1.

6.2 IV&V Performance Standards and Procedures

Developing a performance measurement system involves an understanding of what the program is trying to accomplish and who the main users/customers are, as well as a basic knowledge of the level of service currently being provided by the program. The specific steps in the process are listed below:

- Identification of the program's critical success factors
- Selection of program-dependent performance measures
- Design of the collection and analysis process
- Monitoring
- Performance reporting
- Analysis and action

When designing a performance measurement system, the IV&V or Security Assessment Team will address the following issues:

- What are the uses for and who are the users of the data? Performance measurement reporting can be used for decision-making, performance appraisal, accountability, and improvement in performance.

- Which critical system success factors are related to IV&V or Security Assessment performance factors?
- What indicators should be candidates for reporting? To what extent are these indicators measurable, valid, and comprehensive?
- How and to what extent should indicators be disaggregated? There is no standard approach to disaggregation of performance; it is commonly categorized by degree of difficulty of the incoming workload, or type of service.
- What comparison information should be reported for the various indicators? Comparisons can be made between current information and previous performance, similar jurisdictions, technically developed standards, actual goals set by the agency, etc.
- What explanatory data should be included along with the performance data, and how should it be presented?
- To what extent are the indicators verifiable? Performance measurement indicators can be verified by correlating them to other, independent measures, or the procedures of obtaining data can be carefully and critically examined. Also, systematic reporting of the measures during an extended period of time will contribute to their reliability.
- How should the information be communicated and displayed, and in what types of documents should the performance data be reported? The data should be presented and communicated clearly and precisely.
- What are the costs and feasibility of obtaining and reporting performance information? Collection of performance measurements can be costly, especially if unsystematic, ad hoc procedures are employed.

The IV&V or Security Assessment Team will implement an array of performance metrics to assess performance and planning processes. Implied within every stage of the planning process is the ability to determine progress made toward established goals or targets. This assessment ability is a monitoring function that simply tracks activities. It may be as simple as a “to do” list or as complicated as a plan of action with milestones. Also implied within the planning process is the ability to measure the effectiveness of the actions taken in the conduct of the IV&V or Security Assessment organization’s business. Performance assessment is not merely an end-of-year task, but it is an integral part of the management process itself.

The IV&V or Security Assessment Team will define performance measures based on the project IV&V or Security Assessment Plan and use of the respective IV&V or Security Assessment conduct and reporting standards and procedures. The IV&V or Security Assessment Team will utilize performance measurement metrics that can be verified with

“objective evidence,” in addition to customer satisfaction measures. The measurement of IV&V Team or Security Assessment effectiveness will include an evaluation of the timeliness and quality of deliverables, as well as flexibility of the IV&V or Security Assessment Team.

The performance assessment provides the ability to introduce improvements in both process and plan execution by incorporating knowledge gained from the previous planning cycle. It will show what worked as well as what could be improved. The IV&V or Security Assessment Team will aggressively use performance results and information feedback to improve the process and adjust the strategic plan as the program progresses. Performance measures may be reflected in monthly status reports, or in a quarterly technical report. See Sections 5.2.2.4 and 5.2.2.16 for a description of these report formats.

6.2.1 Performance Assessment Areas

IV&V and Security Assessment performance reporting will describe three mandatory assessment areas relating to the IV&V or Security Assessment Team’s performance:

- Technical (quality)
- Schedule (timeliness)
- Business relations (customer evaluation)

Technical and schedule ratings will reflect how well the IV&V or Security Assessment Team complied with the specific contract performance standards. The third assessment area, business relations, recognizes that, when dealing with FSA, the IV&V Team may have more than one customer. Accordingly, business relations evaluate the working relationships between the IV&V or Security Assessment Team and the contract administration team. Some of the other requirements of the contract not directly related to schedule and performance include:

- User satisfaction
- Integration and coordination of all activity needed to execute the contract
- The IV&V or Security Assessment Team’s history of professional behavior with all parties

Examples of technical and schedule assessment indicators include the following:

- Effective deliverable status system
- Deliverables on/before due date

- Document reviews performed and completed checklists provided, as applicable

An IV&V or Security Assessment Contractor Evaluation Survey will be submitted periodically by FSA and used to assess the IV&V Team's products and processes. The Performance Questionnaire is provided in Appendix I. The IV&V or Security Assessment Contractor may also periodically submit evaluation surveys to the users as a means of assessing the Contractor's effectiveness and getting feedback. The results of this survey will generally be summarized in the form of a memorandum, as described in Section 5.2.2.6. Examples of these survey questions are included in table format in Appendix I and include the following:

Within the scope of the IV&V or Security Assessment involvement:

- Did the IV&V or Security Assessment Team contribute to the reduction of risk? Did they identify risks and formulate and implement risk mitigation plans?
- Did the IV&V or Security Assessment Team identify and apply resources required to meet schedule requirements?
- Did the IV&V or Security Assessment Team assign responsibility for tasks/actions as expected?
- Was the IV&V or Security Assessment Team responsive to ad hoc meetings?
- Was the IV&V or Security Assessment Team flexible and adaptive to schedule changes, etc.?
- Did the IV&V or Security Assessment Team communicate appropriate information to affected program elements in a timely manner?
- Did the IV&V or Security Assessment Team provide best practices or lessons learned?
- Were the IV&V or Security Assessment Team personnel cooperative?
- Were the IV&V or Security Assessment Team's documents free of spelling errors or clerical defects, thorough and complete - was the information accurate?
- Was interim feedback provided to FSA and Mod Partner timely and relevant?
- Were reports delivered either on or ahead of schedule - were reports delivered after the scheduled review meeting?

- Was program planning/management adequate - assignment of personnel, recognition of critical problem areas, cooperative and effective working relationships, effective resource use, response to new tasks, and notification of personnel changes?
- Did the IV&V or Security Assessment support avoid disruption of internal SLC processes and procedures?
- Did the IV&V or Security Assessment activities avoid delays in established schedules and development planning?
- Did IV&V or Security Assessment Team personnel interact professionally with Government and contractor personnel?

Depending on the answers to these questions, positive and negative points may be assigned to create a total score for the evaluation.

6.2.2 Performance Assessment Ratings

For technical and schedule ratings, the IV&V or Security Assessment Team will provide information on planned deliverable schedule adherence and quality control of individual deliverables. Objective evidence will include status reports and other work products delivered to FSA, as well as the IV&V or Security Assessment Team's internal configuration control items as described in Sections 5.1.1 and 5.1.2. These include document review schedules and deliverable files.

For the IV&V or Security Assessment Contractor Evaluation Survey, each performance rating area may be assigned one of five ratings: exceptional (1), very good (2), satisfactory (3), marginal (4), or unsatisfactory (5) as listed below. The ratings given by FSA (or representatives) should reflect how well the IV&V or Security Assessment Team met the schedule and performance expectations of the contract and the business relationship. A critical aspect of the assessment rating system described below is the second sentence of each rating, which recognizes the IV&V or Security Assessment Team's resourcefulness in overcoming challenges that arise in the context of contract performance.

Exceptional. Performance exceeds many expectations. The performance of the indicator being assessed was accomplished with no problems, or with a few minor problems for which corrective actions taken by the IV&V or Security Assessment Team were highly effective.

Very Good. Performance exceeds some expectations. The performance of the indicator being assessed was accomplished with some minor problems for which corrective actions taken by the IV&V or Security Assessment Team were effective.

Satisfactory. Performance meets expectations. The performance of the indicator contains some minor problems for which proposed corrective actions taken by the IV&V

or Security Assessment Team appear satisfactory, or completed corrective actions were satisfactory.

Marginal. Performance does not meet some expectations. The performance of the indicator being assessed reflects a serious problem for which the IV&V or Security Assessment Team has not yet identified corrective actions. The IV&V or Security Assessment Team's proposed actions appear only marginally effective or were not fully implemented.

Unsatisfactory. Performance does not meet any expectations and recovery is not likely in a timely or cost effective manner. The performance of the indicator contains serious problem(s) for which the IV&V or Security Assessment Team's corrective actions appear or were ineffective.

APPENDIX I

**PERFORMANCE ASSESSMENT SAMPLE QUESTIONS
AND SURVEY**

#	Performance Assessment Sample Questions
1	Did the IV&V or Security Assessment Team contribute to the reduction of risk? Did they identify risks and formulate and implement risk mitigation plans?
2	Did the IV&V or Security Assessment Team identify and apply resources required to meet schedule requirements?
3	Did the IV&V or Security Assessment Team assign responsibility for tasks/actions as expected?
4	Was the IV&V or Security Assessment Team responsive to ad hoc meetings?
5	Was the IV&V or Security Assessment Team flexible and adaptive to schedule changes, etc.?
6	Did the IV&V or Security Assessment Team communicate appropriate information to affected program elements in a timely manner?
7	Did the IV&V or Security Assessment Team provide best practices or lessons learned?
8	Were the IV&V or Security Assessment Team personnel cooperative?
9	Were the IV&V or Security Assessment Team's documents free of spelling errors or clerical defects, thorough and complete - was the information accurate?
10	Was interim feedback provided to FSA and Mod Partner timely and relevant?
11	Were reports delivered either on or ahead of schedule - were reports delivered after the scheduled review meeting?
12	Was program planning/management adequate - assignment of personnel, recognition of critical problem areas, cooperative and effective working relationships, effective resource use, response to new tasks, notification of personnel changes?
13	Did the IV&V or Security Assessment support avoid disruption of internal SLC processes and procedures?
14	Did the IV&V or Security Assessment activities avoid delays in established schedules and development planning?
15	Did IV&V or Security Assessment Team personnel interact professionally with Government and contractor personnel?

Quality Assurance (QA) Reporting Form
E-Commerce Applications Development QA Team

QUALITY ASSURANCE MONITORING SURVEY												
Contract Reference: Project: Deliverable or Period:												
<div style="text-align: center;">Evaluation of Contractor's Performance</div> <p style="text-align: center;">Based on Customer Needs and Provided Value Added</p> <p>Please evaluate the QA Contractor's support to your project in terms of value added by answering the attached questionnaire.</p> <p>Performance categories:</p> <table style="width: 100%; border: none;"><tr><td style="width: 20%;">(5) Exceptional:</td><td>Performance <u>exceeds</u> many expectations.</td></tr><tr><td>(4) Very good:</td><td>Performance <u>exceeds some</u> expectations.</td></tr><tr><td>(3) Satisfactory:</td><td>Performance <u>meets</u> expectations.</td></tr><tr><td>(2) Marginal:</td><td>Performance <u>does not meet some</u> expectations.</td></tr><tr><td>(1) Unsatisfactory:</td><td>Performance <u>does not meet any</u> expectations</td></tr></table>			(5) Exceptional:	Performance <u>exceeds</u> many expectations.	(4) Very good:	Performance <u>exceeds some</u> expectations.	(3) Satisfactory:	Performance <u>meets</u> expectations.	(2) Marginal:	Performance <u>does not meet some</u> expectations.	(1) Unsatisfactory:	Performance <u>does not meet any</u> expectations
(5) Exceptional:	Performance <u>exceeds</u> many expectations.											
(4) Very good:	Performance <u>exceeds some</u> expectations.											
(3) Satisfactory:	Performance <u>meets</u> expectations.											
(2) Marginal:	Performance <u>does not meet some</u> expectations.											
(1) Unsatisfactory:	Performance <u>does not meet any</u> expectations											
CIO – E-CAD:	Financial Partners											
_____ _____	_____ _____	_____ _____										
Please provide your comments by COB 01-15-02 to: POC, QA Team Representative.												
Narrative Discussion of Contractor's Performance or based on document review:												
Prepared by: _____ Date: _____												

QA Performance Questionnaire

If you feel a question does not apply or you have no opinion please indicate using (NA).

Within the scope of the Quality Assurance (IV&V) involvement:

1. Did the IV&V Team contribute to the reduction of risk? Did they identify risks and formulate and implement risk mitigation plans?
(1 ---- 2 ---- 3 ---- 4 ---- 5) (NA) **RESPONSE:** []
2. Was the IV&V Team responsive to ad hoc meetings?
(1 ---- 2 ---- 3 ---- 4 ---- 5) (NA) **RESPONSE:** []
3. Was the IV&V Team flexible and adaptive to schedule changes, etc.?
(1 ---- 2 ---- 3 ---- 4 ---- 5) (NA) **RESPONSE:** []
4. Did the IV&V Team communicate appropriate information to affected program elements in a timely manner?
(1 ---- 2 ---- 3 ---- 4 ---- 5) (NA) **RESPONSE:** []
5. Were the IV&V Team personnel cooperative?
(1 ---- 2 ---- 3 ---- 4 ---- 5) (NA) **RESPONSE:** []
6. Were the IV&V Team's documents free of spelling error or clerical defect, thorough and complete – was the information accurate?
(1 ---- 2 ---- 3 ---- 4 ---- 5) (NA) **RESPONSE:** []
7. Were reports delivered on or ahead of schedule?
(1 ---- 2 ---- 3 ---- 4 ---- 5) (NA) **RESPONSE:** []
8. Was program planning/management adequate – assignment of personnel, recognizing critical problem areas, cooperative and effective working relationships, effective resource use, response to new tasks, notification of personnel changes?
(1 ---- 2 ---- 3 ---- 4 ---- 5) (NA) **RESPONSE:** []
9. Did the IV&V support avoid disruption of internal SLC processes and procedures?
(1 ---- 2 ---- 3 ---- 4 ---- 5) (NA) **RESPONSE:** []
10. Did the IV&V activities avoid delays in established schedules and development planning?
(1 ---- 2 ---- 3 ---- 4 ---- 5) (NA) **RESPONSE:** []
11. Did IV&V Team personnel interact professionally with Government and contractor personnel?
(1 ---- 2 ---- 3 ---- 4 ---- 5) (NA) **RESPONSE:** []